

IG-4160
Zoom Internet
Gateway

User Guide

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1

Getting Started

1.1 Package Contents

Check that your package includes the following items:

- One Internet Gateway
- One CD-ROM
- One power adapter and power cord
- One Ethernet cable
- Installation instructions, including a Quick Start for cable modem users, and this User Guide.

If anything is missing or damaged, please contact your supplier.

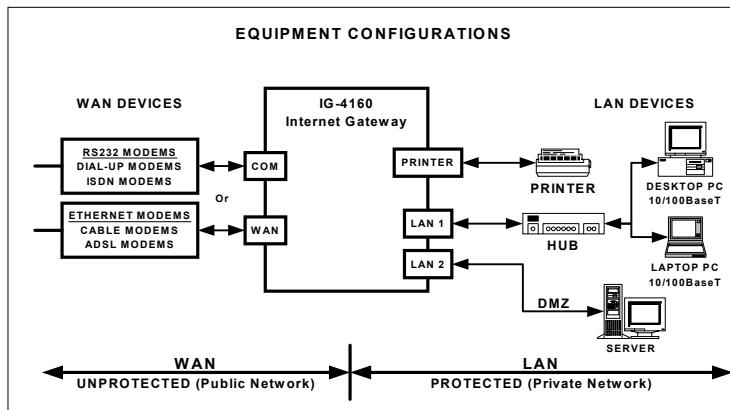
1.2 You Will Also Need

The IG-4160 is compatible with computers using the Windows, Macintosh, and Linux operating systems.

Optionally, you can use your Gateway as a print server and share a parallel port printer connection among multiple PCs. (Note: This option is only for Windows computers.) If you want to use your Gateway as a print server, you will need a standard parallel printer and cable.

1.3 Installation Road Map

The following diagram depicts the different setups that are possible with your Zoom IG-4160 Internet Gateway.



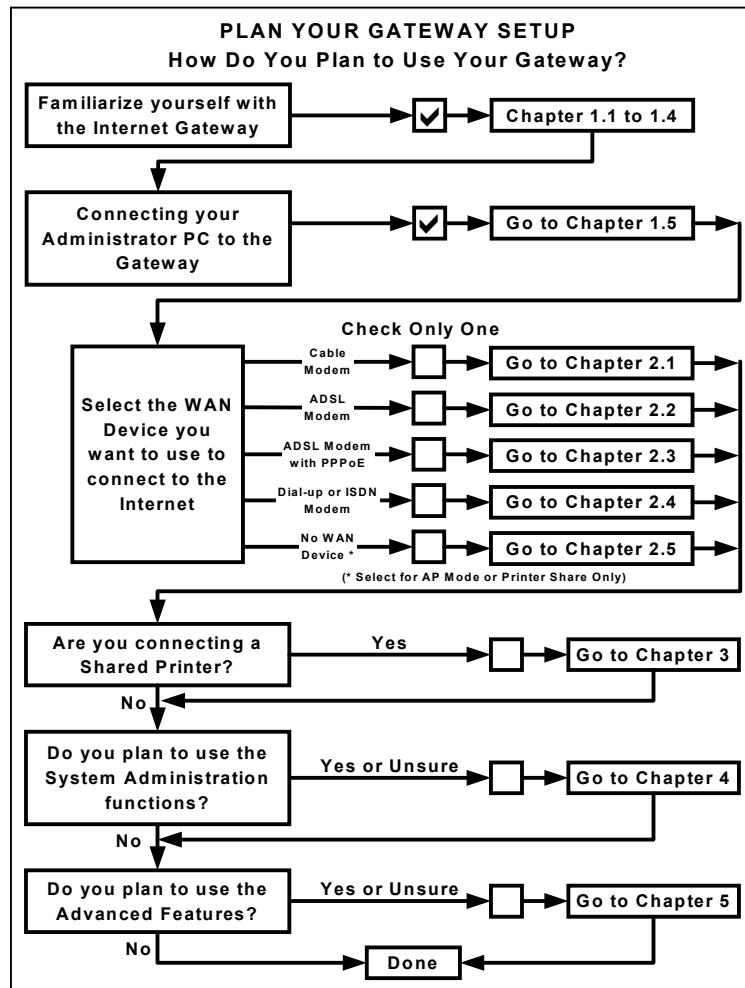
The first step is to decide what type of WAN device you intend to use to access the Internet. (Your choices are depicted on the left-hand side of the diagram above.)

Once you've made that decision, the key stages to set up and use your Gateway are as follows:

- 1** Connect the hardware.
- 2** Establish wired communication with the Gateway using a PC that we'll call the Administrator PC.
- 3** Configure your Internet access method using the Administrator PC.
- 4** Connect to the Internet.

Using the following flowchart as a road map should simplify the process of setting up your Gateway. You can also keep this flowchart as a handy reference, should you ever want to modify your Gateway setup.

In this manual we also describe additional options and features available to you. For example, you can connect a printer to your Gateway and share it among multiple users. You can also add more sophisticated capabilities to the Gateway. For instance, you can modify its built-in firewall protection to accommodate special gaming or video applications. The flowchart also includes these additional chapters.



1.4 Familiarizing Yourself with Your Gateway

The Gateway has LED indicators on its front panel so you can monitor its operation and perform troubleshooting if necessary.

The table below defines these LEDs and how to interpret them. This table is for reference only and is not required for IG-4160 installation.

LED	Function	Color	Status	Description
POWER	Power indicator	Green	On	Power is on.
SYS	System status	Orange	Blinking @ 1 sec. intervals	Gateway is functioning properly.
			Rapid blinking	Gateway is resetting to factory defaults.
WAN	WAN port activity	Green	On	WAN port is linked.
			Blinking	WAN port is sending or receiving data.
Link/Act 1~2	Wired LAN port link activity status	Green	On	LAN port is connected. No data is flowing.
			Blinking	LAN port is connected. Data is flowing.
			Off	LAN port is not connected.
100BaseT 1~2	Wired LAN port data rate	Green	On	Data rate=100Mbps
			Off	Data rate=10Mbps

The back panel of your Gateway looks like this.



The table below explains the purpose of these back panel ports, or jacks. When you connect your modem to your Gateway, all connections will originate from this back panel.

Port	Description
COM	Serial port in case you want to connect a dial-up or ISDN modem
PRINTER	Parallel printer port for optional printer
1	A LAN port for connecting networked computers and other 10/100BaseT Ethernet LAN devices
2	A second LAN port for connecting networked computers and other 10/100BaseT Ethernet LAN devices
WAN	In case you want to connect an Ethernet cable or DSL modem
12VDC	Power: DC 12V, 1.5A (minimum)

Before connecting your modem and Gateway, be sure to review the following pre-installation checklist.

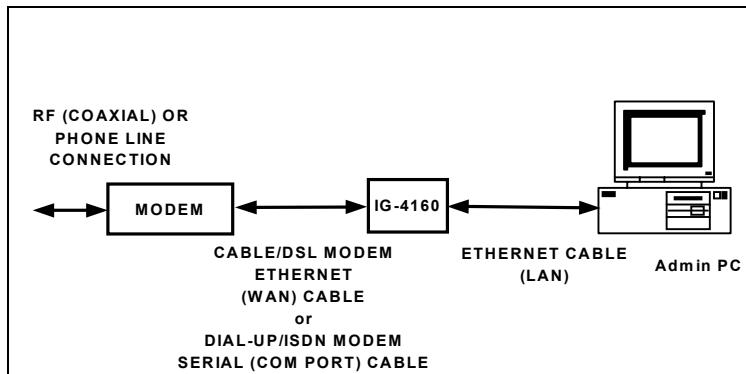
PRE-INSTALLATION CHECKLIST

Review this checklist before setting up your Gateway and modem

- ✓ Check with your service provider: If you have a cable modem, you may have to register your Gateway's WAN MAC address before setting up the Gateway. Note: The WAN MAC address is printed on the Gateway's bottom case label.
- ✓ Is your Internet or online service working properly? If necessary, refer to the instructions provided by your service provider.
- ✓ Check that an Ethernet NIC card is already installed in your PC, then turn to page 9.

1.5 Connecting the PC and the IG-4160

The diagram below shows what your completed setup will look like.



A Be sure you've completed the pre-installation checklist on page 8.

Shut off your computer and turn off your modem. Don't plug the Gateway in yet.

B For cable and DSL modems:

Unplug the Ethernet cable from your PC and plug it into the **WAN** port on the back of the Gateway. Don't unplug the Ethernet cable plugged into the modem.

For dial-up and ISDN modems:

Unplug the serial cable from the PC and plug it into the **COM** port on the back of the Gateway. Don't unplug the serial cable plugged into the modem.

C Using the Ethernet cable supplied with the Gateway, plug one end into a **LAN** port (labeled **1** and **2**) on the back of the Gateway and plug the other end into the PC.

- D** Turn the modem back on. If you are using a cable or DSL modem, wait until it synchronizes itself with the modem service. (You'll know it's synchronized when the cable modem's light goes from blinking to steady.)
- E** Plug the Gateway in: Plug one end of its power adapter into the **12VDC** power jack on the back of the Gateway and then plug the other end into a wall outlet. The Gateway's **SYS** indicator will come **ON** for about 10 seconds, and then it will flash rapidly a few times. When the indicator flashes continuously once per second, the start-up process is complete, and your Gateway is ready.
- F** **Note:** If you are using a cable modem and your service provider has instructed you to call back with your Gateway's WAN MAC address, now is the time to do so.

Turn your computer back on and restart it.

2

Configuring Your Internet Access Method

This chapter explains how to configure your Internet access method, or WAN type, which is the next step in the installation process. Note: The Gateway's default Internet access method is Cable or DSL Modem using a Dynamic IP Address.

Note: If you prefer to set up your Gateway using an interactive online guide, please refer to the accompanying Zoom CD and the Smart Start program.

Now that you have connected your modem and Gateway, you are ready to communicate with the Gateway and configure your WAN type.

- 1** Launch your Web browser on the Administrator PC, type the Gateway's default IP address—**192.168.123.254**—and press **Enter**.
- 2** The **Login** screen displays. Type the system password in the **System Password** field (default is **admin**), and click the **Login** button.

Note: If the **Login** screen doesn't display, perform the following in this order:

- a** Recheck all connections.
- b** Restart the Gateway.
- c** Perform a “hard” reset. (See page 44.)

3 The System Status screen displays.



This screen provides details about the type of WAN device you are using, or how you are connected to the Internet. (Refer to **Chapter 5 System Administration** for more information about the **System Status** screen.)

Note: The wireless features are not supported in your IG-4160.

The default Internet access method is **Cable Modem** or **DSL Modem (Dynamic IP Address)**. If you want to connect to the Internet using a different WAN type, click the **Change** button or the **Basic Setup** icon at the top of the user interface.

Note: Click the **Refresh** button to update the contents of the status display.

4 The Basic Setup screen displays.



In addition to **Cable Modem or DSL Modem (Dynamic IP Address)** (see below), your choices are as follows:

- **DSL Modem with Static IP Address** (turn to page 15)
- **DSL Modem with PPPoE** (turn to page 16)
- **Dial-up or ISDN Modem** (turn to page 17)
- **No WAN Internet Access** (turn to page 19).

To change your WAN type, select the correct button, then click **View/Configure WAN Settings**.

2.1 Using a Cable or DSL Modem with a Dynamic IP Address

- The Gateway's default Internet access method is **Cable or DSL Modem with a Dynamic IP Address**.
- If this is your Internet access method, you don't necessarily have to make any changes. To review your settings, click **View/Configure WAN Settings** from the Gateway's **Basic Setup** screen.

View / Configure WAN Type

Internet Access using Cable or DSL Modem

Item	Setting
▶ WAN Type	Dynamic IP Address
▶ Host Name	<input type="text"/> (optional)
▶ Renew IP Forever	<input type="checkbox"/> Enable (Auto-reconnect)
<input type="button" value="Save"/> <input type="button" value="Undo"/> <input type="button" value="Cancel"/>	

Host Name (Optional)	May be required by some service providers. If so, your service provider will inform you.
Renew IP Forever	Disabled by default. Check the Enable (Auto-reconnect) box if you want the Gateway to renew the IP address automatically when the IP address lease is about to expire. This option also allows the Gateway to automatically connect to your service provider after the Gateway is restarted or if the connection is interrupted.

- If you change any settings, click **Save** (and **Restart** if you are prompted to do so).

Return to the road map on page 6 to review your setup plan.

2.2 Using a DSL Modem with a Static IP Address

- From the Gateway's **Basic Setup** screen, select the **DSL Modem (Static IP Address)** button and then click **View/Configure WAN Settings**. A screen displays with several fields to fill in.

View / Configure WAN Type	
Internet Access using DSL Modem	
Item	Setting
► WAN Type	Static IP Address
► WAN IP Address	<input type="text" value="0.0.0"/>
► WAN Subnet Mask	<input type="text" value="255.255.255.0"/>
► WAN Gateway	<input type="text" value="0.0.0.0"/>
► Primary DNS	<input type="text" value="0.0.0.0"/>
► Secondary DNS	<input type="text" value="0.0.0.0"/>

Save **Undo** **Cancel**

WAN IP Address	Type the IP address your service provider has given you.
WAN Subnet Mask	Type the mask your service provider has given you.
WAN Gateway	Type your service provider's Gateway IP address. Assigned by your service provider.
Primary DNS*	Domain Name Server IP address. Assigned by your service provider.
Secondary DNS*	Backup Domain Name Server IP address. Assigned by your service provider.

*Primary and Secondary DNS addresses are the addresses of the initial server and the backup server assigned to request a Web-name-to-IP-address lookup, respectively. Note: If you set these addresses as 0.0.0.0, they will be automatically assigned.

- Once you have filled in all the information, click **Save** (and **Restart** if you are prompted to do so).

Return to the road map on page 6 to review your setup plan.

2.3 Using a DSL Modem with PPPoE

- From the Gateway's **Basic Setup** screen, select **DSL Modem with PPPoE** and click **View/Configure WAN Settings**. A screen displays with several fields to fill in. These fields control your shared PPPoE session, which is active whenever any computer on your LAN accesses the Internet.

View / Configure WAN Type

Internet Access using DSL Modem with PPPoE

Item	Setting
► WAN Type	PPPoE (PPP over Ethernet)
► PPPoE Account Name	<input type="text"/>
► PPPoE Password	<input type="password"/>
► Maximum Idle Time	300 sec (0-99999, 0=Never) <input checked="" type="checkbox"/> Auto-reconnect (permanent session)
► PPPoE Service Name	<input type="text"/> (optional)
► Assigned IP Address	0.0.0.0 <input type="text"/> (optional)

Save **Undo** **Cancel**

PPPoE Account Name	Type the name your service provider has given you.
PPPoE Password	The Password is also given by your service provider. After the Password is set, this field will appear empty.
Maximum Idle Time (seconds) 0=never disconnect 1-999=allowed default=300	The length of time you can be idle before your service provider will disconnect your session. If Auto-reconnect is enabled, the Gateway will automatically connect to your service provider after the Gateway is restarted or the connection is interrupted.
PPPoE Service Name (Optional)	Only type a Service Name if your service provider requires it.
Assigned IP Address (Optional)	Required by those service providers that provide PPPoE session control with a Static IP address.

- Once you have filled in all the information, click **Save** (and **Restart** if you are prompted to do so).

Return to the road map on page 6 to review your setup plan.

2.4 Using a Dial-up or ISDN Modem

- From the Gateway's **Basic Setup** screen, select the **Dialup (56k, 33.6k) or ISDN Modem** button and then click **View/Configure WAN Settings**. A screen displays with several fields to fill in. These fields control your shared PPP (Point to Point Protocol) session, which is active whenever any computer on your LAN must access the Internet.

View / Configure WAN Type

Internet Access using Dialup or ISDN Modem

Item	Setting
► WAN Type	Dialup / ISDN
► Dialup Telephone Number	<input type="text"/>
► Dialup Account Name	<input type="text"/>
► Dialup Password	<input type="text"/>
► Maximum Idle Time	300 seconds
► Connection Type	<input checked="" type="radio"/> Permanent Connection <input type="radio"/> Redial on Data Traffic Demand <input type="radio"/> Manually Dial the Connection
► Baud Rate	57600 bps
► Primary DNS	<input type="text"/> 0.0.0
► Secondary DNS	<input type="text"/> 0.0.0
► Extra Settings (Initialization String)	<input type="text"/>

Save | Undo | Cancel

Dial-up Telephone Number	Type the number your service provider has given you. Note: Make sure you include all dialing characters for your location. Refer to your modem manual for dial-string programming.
Dial-up Account Name	Type the name your service provider has given you.
Dial-up Password	The Password is also assigned by your service provider. Note: After the Password is set, this field will appear empty.
Maximum Idle Time (seconds): 0=Never disconnect 1-999=allowed default=300	The length of time you can be idle before the Gateway will disconnect your dial-up session. Set it to 0 or click Permanent Connection to disable.
Connection Type: Permanent Connection	Connection is always on. The Gateway will automatically connect to your service provider after you restart it or if the connection is interrupted.
Connection Type: Redial on Data Traffic Demand	A dial-up session will be re-established if any computer on your LAN needs Internet access.
Connection Type: Manually Dial the Connection	A dial-up session will be established only when the system administrator clicks the dial button on the System Status screen.
Baud Rate (serial COM port)	The communication speed on the COM port or serial cable between the Gateway and dial-up or ISDN modem.
Primary DNS*	Domain Name Server IP address. Assigned by your service provider.
Secondary DNS*	Backup Domain Name Server IP address. Assigned by your service provider.
Extra Settings (Optional)	You can add an initialization string and send it to your modem or ISDN TA to optimize the quality of your communication. Refer to your modem manual for instructions.

*Primary and Secondary DNS addresses are the addresses of the initial server and the backup server assigned to request a Web-name-to-IP-address lookup, respectively. Note: If you set these addresses as 0.0.0.0, they will be automatically assigned.

- Once you have filled in all the information, click **Save** (and **Restart** if you are prompted to do so).

Return to the road map on page 6 to review your setup plan.

2.5 Using the Gateway Without WAN Access

You can also use the Gateway to share a printer among multiple PCs rather than as a means of accessing the Internet

- To configure your Gateway to operate this way, from the Gateway's **Basic Setup** screen, click the **No WAN Internet Access** button and then click **View/Configure WAN Settings**. You will see a confirming screen prompting you to save your choice. Click **Save** (and **Restart** if you are prompted to do so).

Return to the road map on page 6 to review your setup plan.

3

Setting up the Gateway as a Print Server

If you have a Windows PC, you can use your Gateway to share a printer. Setting up your Gateway as a print server is a three-stage process.

- 1** Connecting the printer to the Gateway.
- 2** Installing the software from the Zoom CD on all the PCs that will share the printer.
- 3** Configuring the print server function.

Configuration instructions differ slightly, depending on your PC's operating system.

3.1 Connecting the Printer to the Gateway

To connect a printer to the Gateway, you need a standard parallel printer and cable.

On the back panel of the Gateway, plug the 25-pin end of the printer cable into the jack labeled **Printer**. Plug the other end of the cable into the jack on the back of the printer.



The next stage is to install the print server software.

3.2 Installing the Print Server Software on a Client PC

You must install the print server software on each PC that will share the printer connected to the Gateway. Follow these steps.

- 1 Insert the Zoom CD-ROM into your computer's CD-ROM drive. The following dialog box should display automatically. If it doesn't, double-click the **setup.exe** icon in the CD-ROM's folder.



- 2 Click the Zoom Software button.
- 3 Click the **Install Print Server** button. The installation will proceed.
- 4 When the **Welcome** dialog box displays, click the **Next** button.
- 5 Select the destination folder and click **Next**. The setup program will install the Print Server in the destination folder.
- 6 When prompted, click **Finish**.
- 7 When prompted, select the entry, **Yes, I want to restart my computer now**, and click **OK**. Once you restart your computer, the software installation is complete.

The final stage is to configure the print server function.

3.3 Configuring the Print Server Function

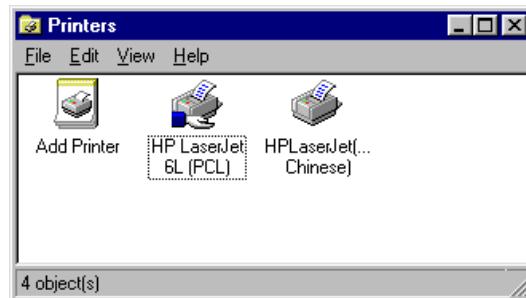
To configure the Gateway's Print Server function, you must choose one of two sets of instructions:

- If you have already set up the printer that is connected to the Gateway, follow the steps below.
- If you haven't already set up the printer that is connected to the Gateway, follow the steps on page 24.

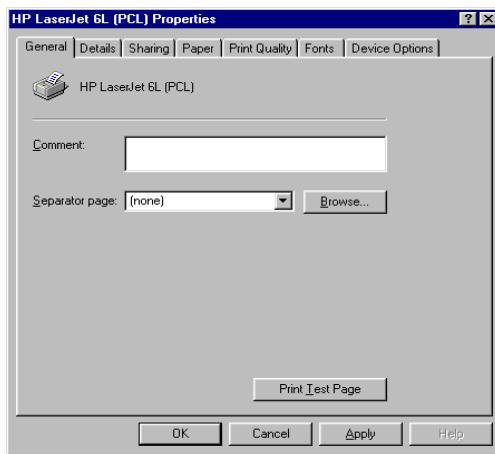
If You Have an Existing Printer

Note: The illustrations here are representative. Depending on your PC's operating system, your printer dialog boxes may look slightly different.

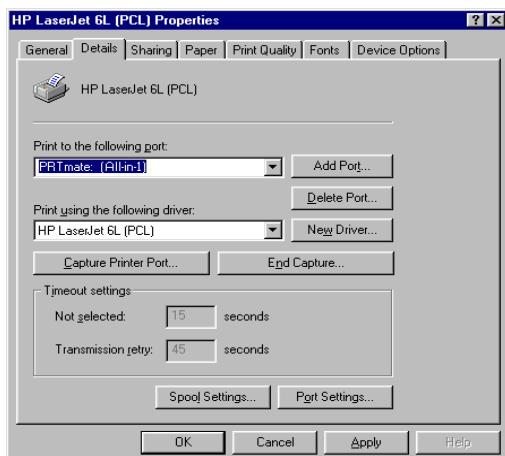
- 1 From the PC's desktop, click **Start | Settings | Printers**. Because you have a previously installed printer, you will see its icon in the **Printers** folder. In our example, it is the **HP LaserJet 6L**.



- 2** Right-click the printer icon, and select **Properties** to display the **Properties** dialog box.

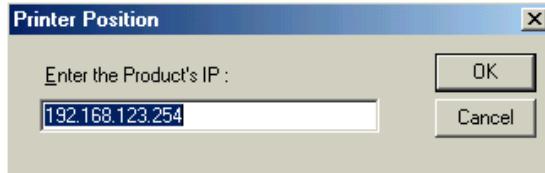


- 3** Click the **Details** or **Ports** tab.



- 4** Choose **PRTmate: (All-in-1 IP-Sharer)** from the **Print To...** list. If **PRTmate: (All-in-1 IP-Sharer)** is not in the list, click **Add Port – Other** and select **PRTmate port**.

- 5** Click the **Port Settings** or **Configure Port** button. You will be prompted to type the Gateway's LAN IP address. Type it in (the default is 192.168.123.254), and click **OK**.



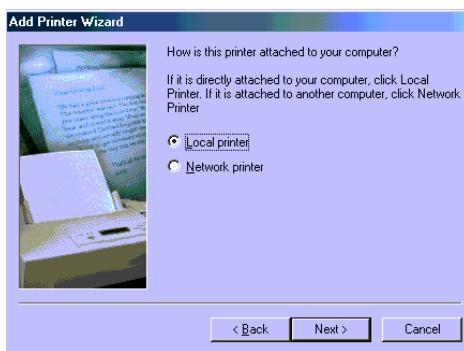
- 6** If prompted again, click **OK** or **Finish**. That's it. Now your Print Server is ready.

If You Don't Have an Existing Printer

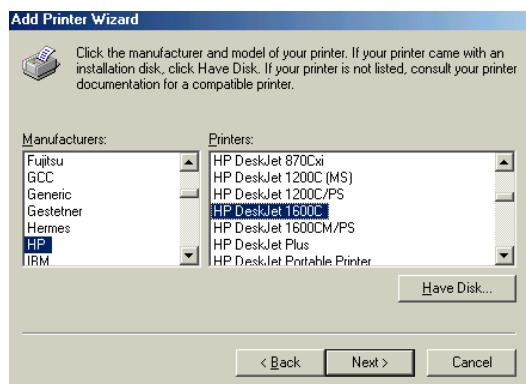
If you want to configure your Gateway's Print Server function, but don't have a printer installed yet, follow the instructions below.

Note: The illustrations here are representative. Depending on your PC's operating system, your printer dialog boxes may look slightly different.

- 1** From the PC's desktop, click **Start** | **Setting** | **Printers**, and double-click **Add Printer** to display the **Add Printer Wizard** dialog box. Click **Next**.
- 2** The following dialog box displays. You must select **Local Printer**. Then click **Next**.



- 3** Scroll the displayed list, select the manufacturer and model of your printer, and click **Next**.



Note: If you can't locate your printer on the list, refer to the CD-ROM, floppy disk, or documentation that came with your printer.

- 4** A dialog box displays, prompting you for the name of the port that you want to use for this printer. Select **PRTmate: All-in-1 IP-Sharer**, and then click the **Configure Port** or **Port Settings** button.

You will be prompted to enter the Gateway's LAN IP address. Type it in (the default is 192.168.123.254), and click **OK**.



- 5** Continue to click **Next** until the process is complete, when you will be prompted to click **Finish**. Now your Print Server is ready.

3.4 Uninstalling the Print Server

Should you want to remove the Gateway's Print Server, follow these steps.

- 1** From the PC's desktop, click **Start | Settings | Control Panel** and then double-click **Add/Remove Programs**.
- 2** From the resulting displayed dialog box, select **Print Server** and click the **Change/Remove** or **Add/Remove** button. (Depending on your operating system, the button may have a slightly different label.)
- 3** When prompted to **Confirm File Deletion**, click **Yes**.
- 4** Once the uninstall process is complete, you will be prompted to click **OK**. Then click **OK** again and **Close** to close the **Add/Remove Programs** folder.
- 5** Restart your PC.

Note: The user documentation and the Smart Start program are also installed on your computer when you install the Print Server. To remove these items, from the desktop, go to **Start | Programs | Zoom | Uninstall**.

4

Advanced Setup Options

In addition to its basic setup options, the Zoom IG-4160 Internet Gateway includes options for specialized, or advanced, settings. If you are like most users, you will not need these options. Your Gateway is designed so that the basic setup settings are sufficient for most users. This chapter is applicable to you only if you need to perform sophisticated tasks such as those listed below:

- *Modify the firewall to open up access portals to special applications, such as games or videoconferencing.*
- *Configure the LAN DHCP server.*
- *Configure a Virtual Server.*
- *Configure a DMZ Host.*
- *Use a non-standard FTP port.*
- *Configure LAN MAC Addresses.*
- *Configure the Router Access Control option.*
- *Use the WAN Ping Response Disable feature.*
- *Use the Clone WAN MAC Address option.*

4.1 Modifying Firewall Settings

If you want to use special applications such as certain Internet games, videoconferencing, and Internet telephony, you often have to use non-standard ports or multiple open ports. A port is an endpoint to a logical connection; the port number identifies the logical channel being used; for example, port 21 is associated with FTP (File Transport Protocol). By definition, your Gateway's firewall prevents unauthorized access to any open ports. Some applications require access to ports that your firewall would normally deny. You must modify the Gateway's firewall settings if you want to accommodate these types of applications.

Specifying Special Application Settings

To make it easier to use, your Gateway includes some preprogrammed special application settings—for example, MSN Gaming Zone and Battle.net. To enable one of these preprogrammed applications, follow these steps.

- 1** Open the Gateway's **Basic Setup** screen by clicking the same-named icon at the top of the main interface window, and click the **Modify Firewall** button to display the following screen.

The screenshot shows a software interface titled "Modify Firewall". At the top left is a dropdown menu labeled "Select Application" with the option "- select one -". Next to it is a "Copy" button. Below that is a dropdown menu labeled "Select ID" with the option "-". A table below these fields contains eight rows, each representing a special application setting. The columns are labeled "ID", "Trigger", "Incoming Ports", and "Enable". The "ID" column has values 1 through 8. The "Trigger" column contains empty input fields. The "Incoming Ports" column contains empty input fields. The "Enable" column contains eight checked checkboxes. At the bottom of the table are two buttons: "Save" and "Undo".

ID	Trigger	Incoming Ports	Enable
1			<input checked="" type="checkbox"/>
2			<input checked="" type="checkbox"/>
3			<input checked="" type="checkbox"/>
4			<input checked="" type="checkbox"/>
5			<input checked="" type="checkbox"/>
6			<input checked="" type="checkbox"/>
7			<input checked="" type="checkbox"/>
8			<input checked="" type="checkbox"/>

- 2** Select the application you want to enable from the dropdown list, and select the **ID** number you want to associate it with. The ID number is a convenient way to remember and use a particular combination of **Trigger** and **Incoming Ports**; for example, if you frequently use the same gaming application, you might want to associate it with ID 1. You can store as many as eight special applications in the table.
- 3** Click **Copy**. The **Trigger** and **Incoming Ports** will automatically appear alongside the selected **ID** number, and the **Enable** box will be checked.
- 4** Click **Save** to save your changes, or click **Undo** to start over.

Note: To disable a special application, uncheck the **Enable** box.

If you want to use a special application that isn't on the Gateway's preprogrammed list, we recommend that you first visit this web site:

www.practicallynetworked.com/sharing/specialapps.htm.

This site contains easy-to-understand instructions about special applications and trigger and port usage. It also includes a list of open ports, which you will need to manually set triggers and incoming ports.

A trigger is the numeric name for an outbound port. If you send an outbound packet that is associated with a particular trigger, the Gateway will monitor this packet; when it sees an inbound packet associated with this trigger, it will allow the inbound packet through the firewall.

An incoming port is the numeric name for an inbound port. Incoming ports are always associated with certain triggers. The Gateway "binds" single or multiple inbound packets to certain triggers, and allows those specified packets through the firewall, once they are "triggered" by the outbound ports.

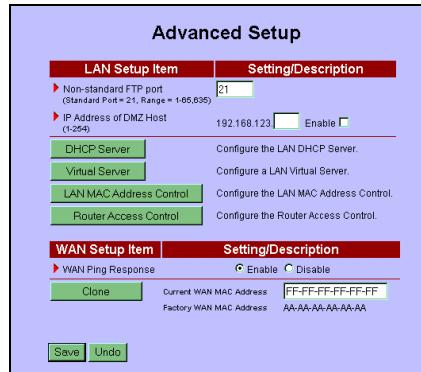
Note: Only one computer at a time can use a special application and open port(s).

For some specialized applications, modifying the firewall settings in the way described above will not suffice. Some applications—NetMeeting, for example—require completely unrestricted access. For these applications, you should use the alternative method of changing the IP address of the **DMZ Host**, described below.

Setting the DMZ Host's IP Address

If you want to allow one computer on your LAN unrestricted Internet access (for example, to set up a web server), you can define a DMZ (Demilitarized Zone) for it. All IP packets flowing to and from that computer will be unrestricted by the firewall. You can define one IP address for this DMZ host. Follow these steps.

- 1** Open the Gateway's **Advanced Setup** screen by clicking the same-named icon at the top of the main interface window.



- 2** In the **LAN Setup Items** list, next to the entry **Non-standard FTP Port**, highlight the **Non-standard FTP** field and type in the number you want to use.
- 3** Click **Save** to save your changes (or **Undo** to start over).

Note: For security reasons, specifying the use of a non-standard FTP port is temporary. It will be lost when you restart the Gateway.

4.2 Configuring the LAN DHCP Server

If your LAN has a lot of computers, it can be a time-consuming task to configure each one with an IP address. DHCP (Dynamic Host Configuration Protocol) offers a rather simple approach to handling all the requisite computer settings. A DHCP server automatically issues IP addresses to computers on the network. Each computer retains the use of that IP address for a specific time period (the lease time) defined by the system administrator.

The Gateway's DHCP server is enabled by default and can assign as many as 253 IP addresses.

To modify the configuration of the LAN DHCP server for your Gateway, follow these steps.

- 1** Open the Gateway's **Advanced Setup** screen by clicking the same-named icon at the top of the main interface window and click the **DHCP Server** button to display the **DHCP Server** screen. To disable **DHCP Server**, click **Disable**. To configure **DHCP Server**, click **Enable** and proceed to Step 2.

DHCP Server

Item	Setting
▶ DHCP Server (LAN)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
▶ IP Pool Starting Address	<input type="text" value="100"/> (1-239)
▶ IP Pool Ending Address	<input type="text" value="199"/>
▶ Domain Name (LAN)	
▶ Gateway IP Address	<input type="text" value="0.0.0.0"/> (optional) <small>Click here to view IP Addresses assigned to LAN Devices.</small>
View DHCP Clients List	
<input type="button" value="Save"/> <input type="button" value="Undo"/>	

- 2** Define the range of IP addresses you want to use by filling in the **IP Pool Starting and Ending Address** fields.

Note: You need only type the last three digits of the IP addresses. (The first nine will be automatically entered based on your Gateway address.) The starting IP address can be 1-239; the ending IP address can be 2-253.

- 3 Optional Entries: Domain Name and Gateway Address.** A domain name is a means of easily identifying your network.

The Gateway IP address would be the IP address of an alternate Gateway (if you were to use one).

- 4** Click **Save** to save your changes (or **Undo** to start over).

If you want to review the list of users connected to the DHCP server or see what IP addresses are in use, click **View DHCP Clients List**.

4.3 Configuring a Virtual Server

Your Gateway includes the ability to support a virtual server. By implementing a virtual server, a system administrator can give users who are outside the firewall access to Web, FTP, or other Internet services that are provided inside the firewall. This is done on a case-by-case basis.

To simplify the task of setting up a virtual server, the Gateway includes a preprogrammed list of well-known Internet services. To enable one of these preprogrammed services, follow these steps.

Note: You can ensure that a user always has the same IP address by “locking” their MAC address to a specific IP address. Click **LAN MAC Address Control** to set this up.

- 1 Open the Gateway’s **Advanced Setup** screen by clicking the same-named icon at the top of the main interface window and click the **Virtual Server** button to display the **Virtual Server** screen.

ID	Service Port	Server IP	Enable
1		192.168.123	<input type="checkbox"/>
2		192.168.123	<input type="checkbox"/>
3		192.168.123	<input type="checkbox"/>
4		192.168.123	<input type="checkbox"/>
5		192.168.123	<input type="checkbox"/>
6		192.168.123	<input type="checkbox"/>
7		192.168.123	<input type="checkbox"/>
8		192.168.123	<input type="checkbox"/>
9		192.168.123	<input type="checkbox"/>
10		192.168.123	<input type="checkbox"/>
11		192.168.123	<input type="checkbox"/>
12		192.168.123	<input type="checkbox"/>

- 2 From the **Select Service** dropdown list, select the service you want for that particular user—for example, SMTP. (The port number appears in parentheses.)
- 3 Click the ID number you want to associate with that service and click **Copy**.

The ID number is a convenient way to refer to a particular computer.
- 4 Under **Server IP**, type the last three numbers of that particular user’s IP address. (The available range is 1-254.) The **Enable** box will be checked automatically. You can disable any application by unchecking the **Enable** box.
- 5 Click **Save** to save your changes (or **Undo** to start over).

If you want to use a special service that isn't on the Gateway's preprogrammed list, you can do so manually. Before you do so, however, we recommend that you visit this web site: <http://www.practicallynetworked.com/sharing/specialapps.htm>. This site contains easy-to-understand instructions about special services. It also includes a list of open ports, which you will need to set up a virtual server.

Once you have determined which **Service Port** you want to use, type in the number, then type the last three numbers of that particular user's IP address and check **Enable**. (The available range is 1-254.)

4.4 Configuring LAN MAC Addresses

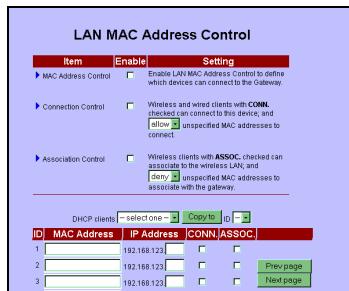
The Gateway's **LAN MAC Address Control** option gives a system administrator control over each individual computer's network privileges. This feature is also useful as an additional security measure, because you can restrict access to known computers on the network. The **LAN MAC Address Control** option uses a 12-digit alphanumeric string to uniquely identify each network hardware device.

The **Connection Control** item allows control over which clients have access to the Gateway. You have two choices: **allow** or **deny**. If you deny a client a connection, it cannot access any Internet, print server, or administrative functions.

Note: The **Association Control** item is for wireless access only and is not supported in your IG-4160.

To set up **LAN MAC Address Control** parameters, follow the steps below. Refer to the accompanying table if you need additional information regarding the differences in privileges.

- 1** Open the Gateway's **Advanced Setup** screen by clicking the same-named icon at the top of the main interface window, and click the **LAN MAC Address Control** button. Then check the **MAC Access Control Enable** box.



- 2** Specify which devices you want to be able to connect or associate with the Gateway by checking the accompanying **Enable** boxes and selecting **allow** or **deny** from the dropdown lists.
- 3** Define the LAN MAC address and IP address pairs. Use the **Prev Page** and **Next Page** buttons to scroll the list of pairs. (The Gateway can hold a maximum of 32 pairs.) Use the **DHCP clients** dropdown list to find LAN MAC addresses known to the DHCP server. Check the **Conn.** (connection) boxes for each LAN client. Note: The **Assoc.** box is not activated on your IG-4160.

- 4** Click **Save** to save your changes (or **Undo** to start over).

The following table lists what a client can and cannot do when **Conn.** is enabled or disabled.

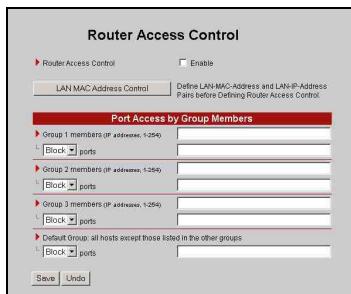
Connection	Definition
Connection checked	Full access to the Internet and all network resources
Connection not checked	Can communicate with other LAN clients, but cannot connect to the Internet, use the print server function, or communicate with the Gateway

4.5 Configuring the Router Access Control

The **Router Access Control** option allows a system administrator to give clients or groups of clients specific access rights to Internet services. To set up this feature, follow the steps below. We've also included a list of common service port numbers on page 37.

Note: We recommend that you define the LAN MAC-address to LAN IP-address relationships before beginning the process of configuring Router Access Control. Click the **LAN MAC Address Control** button to proceed.

- 1 Open the Gateway's **Advanced Setup** screen by clicking the same-named icon at the top of the main interface window, click **Router Access Control**, and check the **Enable** box.



- 2 Divide users into different groups. Users are identified by their IP addresses. You can assign members in three special Groups. Any unassigned members belong to the Default Group.
- 3 Assign the access rights of each group. You can **allow** or **block** access to specified TCP and UDP ports and Internet services. The table below shows a sample.

Group	Members	Access Right	Definition
Default	-	Allow ()	No access rights
Group 1	50-99	Allow (80,110, 25)	Can browse(80), receive(110) and send(25) email only
Group 2	100-199	Block (21,144)	Cannot read newsgroups (144) and cannot FTP(21)
Group 3	1-9,20	Block ()	Full access (block nothing)

- 4** Click **Save** to save your changes (or **Undo** to start over).

Sample Service Port Number Table

Service Port	Service	Usage	Protocol
113	Auth	authentication	Authentication Service Protocol
53	DNS	domain names	Domain Name Service
21	FTP	file transfers	File Transfer Protocol
25	SMTP	send email	Simple Mail Transfer Protocol
110	POP3	read email	Post Office Protocol
1723	PPTP	secure communications	Point to Point Tunneling Protocol
23	Telnet	terminal session	TELNET
80	Web	web access	HTTP World Wide Web
88	Kerberos	authentication	Kerberos
79	Finger	system/user data	Finger
69	tftp	file transfers	Trivial File Transfer
161	SNMP	system management	Simple Network Management Protocol
144	news	newsgroups	News

4.6 Configuring the WAN Ping Response

The Gateway's **WAN Ping Response** feature is enabled by default. That way, anyone can "ping" your Gateway to determine if it is still active on the network. (Ping stands for Packet INternet Groper.) Oftentimes helpful during network testing and debugging, this utility sends out a packet and waits for a response. You should also be aware that some people ping others to access their IP addresses and hack into their systems.

If you want your Gateway to respond to a Ping request, go to the **Advanced Setup** screen and click **Enable**. To prevent anyone outside the LAN from pinging your Gateway, click **Disable**.

Note: Some service providers will ping you occasionally to determine whether you are online and still need an Internet connection. If you have disabled the **WAN Ping Response** option, your service provider may log you off. If in doubt, contact your service provider.

4.7 The Clone WAN MAC Feature

Clicking the **Clone** button copies the MAC address of your computer's NIC card to the Gateway's WAN MAC address. Thus, if you've already given your MAC address to your service provider, you can keep using it. (Note: Cloning applies to the NIC card of the computer that is connected to the Gateway.) This function is useful if your service provider records the MAC address of your computer. Cloning it avoids delays caused by the need to re-register MAC addresses.

To clone the WAN MAC address, follow these steps.

- 1** Disconnect all LAN devices from your Gateway—**except** the computer that you want to clone.
- 2** In the **Advanced Setup** screen, click the **Clone** button. You will see your computer's MAC address displayed in the current WAN MAC address field.

3 Click the **Save** button.

Note: As a safety precaution, you may see the following dialog box when you click the **Clone** button. Be sure that your service provider has recorded your computer's WAN MAC address.



5

System Administration

Using a Web-based browser such as Netscape Communicator or Internet Explorer, you can monitor and administer the IG-4160. This Web-based approach works with any Windows, Macintosh, or Unix computer. Using any PC, launch your browser and type the Gateway's IP address:
192.168.123.254.

5.1 Monitoring System Status

From the **System Status** screen, you can review the Gateway's current network settings. This screen also provides details about the status of your WAN type, or how you are connected to the Internet (cable modem, dial-up modem, etc.).

From the **Login** screen, type the system password (default is **admin**) and click **Login** to display the **System Status** screen. Clicking the **Refresh** button updates the contents of the status display. Clicking the **Change** button or the **Basic Setup** icon lets you change your WAN type.



The **System Status** screen displays the following types of information.

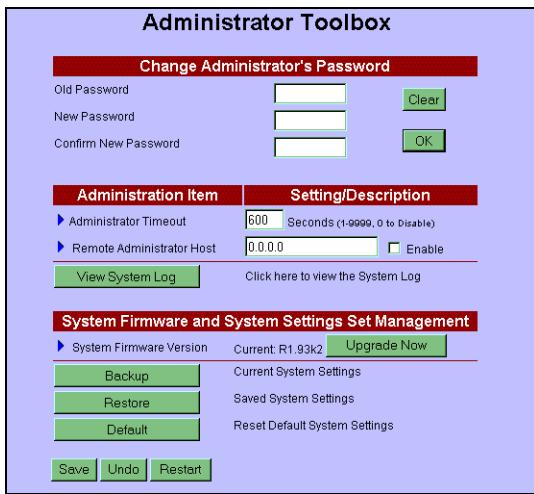
- **WAN MAC Address:** This is the MAC address of the WAN port of the Gateway. This MAC address may be needed by your service provider to register your connection. It is printed on the Gateway's bottom label.
- **WAN IP Address:** This IP address is assigned to your Gateway WAN port by your service provider.
- **Subnet Mask:** This is your service provider's IP address subnet mask.
- **Gateway:** This is your service provider's IP address for the Internet WAN Gateway.
- **Domain Name Server (DNS):** This is the address of the first server assigned to process a Web-Name-to-IP-address lookup.
- **Remaining IP Lease Time:** The IP lease time is the amount of time that your account has to "lease," or use, an IP address to access the Internet. Typically, IP lease times are measured in hours or days. This field shows how much time is left before the current "lease" expires. Click **Renew** to begin your lease anew. You can opt to have the lease automatically renew itself.
- **LAN IP Address.** This is the IP address of the LAN ports (LAN 1, LAN 2).
- **Firmware Version.**

The **System Status** screen also provides details about any attached peripherals, such as a printer or dial-up or ISDN modem. It displays information such as the

- **Printer:** If you are connected to a printer, the status will be **Ready, Paper out** or **Not ready**. A **Kill** button may appear, so you can stop a print job in progress.
- **Dial-up Modem:** If you are using a dial-up or ISDN modem, the status will be **Ready, Not ready**, or **Dialing**. When there is a connection, the connection speed will be displayed. When the modem is ready, you will see a button to manually "dial-up" the connection. When the modem is connected, you will see a button to manually "hang-up" the modem.

5.2 Performing System Administration Tasks

Clicking the **Toolbox** icon at the top of any Gateway user interface screen brings up the **Administrator Toolbox**, from which you can monitor or change several system administration-type settings.



For example, you can

- Change the **Administrator's password**.
Type the existing password, then type the new password twice (once for verification purposes). If you change your password and then forget it, your only recourse is to reset it to the default by performing a “hard” system reset (see page 44).
- Change the duration of the **Administrator Timeout** setting.

Administrator Timeout is the length of time that an administrator connected to the Gateway can be idle before being automatically logged out. The default is **600 seconds** (10 minutes). To disable this feature, type **0**. The maximum timeout is 9,999 seconds (2 hours, 46 minutes).

- Change the IP address of the **Remote Administrator Host**.

Check the **Enable** box next to the **Remote Administrator Host** item if you want to perform administration tasks from outside your private LAN. The default is **0.0.0.0**, which means

that any host can connect to the Gateway to take care of administrative tasks. By entering a specific IP address, only that computer can perform remote administration. If you want to specify a group of trusted users' IP addresses, use subnet mask addresses and /*nn* notation; for example, 10.1.2.0/24. Note: When you enable **Remote Administration Host**, the web server port will be shifted to 88 (the default is **80**).

- **View System Log.**

Click this button to view a log of system activity.

- View current **System Firmware Version**.

Check which system firmware version the Gateway is using.

- **Upgrade Now.**

Clicking this button displays a screen from which you can upgrade the Gateway's firmware. Note: You must first download the upgrade (for example, from our web site or from a floppy disk). Then click **Browse** and select the file location and upgrade filename. Alternatively, you can type a pathname and filename of your choosing. The upgrade file should have a .bin extension.

VERY IMPORTANT!

Do not shut off power to the Gateway while you are upgrading it.

- **Backup** your Gateway **System Settings** to the Administrator's computer.

Click the **Backup** button to save your current settings to a file on your computer. If you want to tinker with the system settings, this feature lets you save a backup of the current settings should you ever want to reinstate them.

- **Restore** Saved System Settings.

Click this button to retrieve a backup file containing a complete set of system settings. Note: A file of this type would be stored on your PC.

- Revert back to **Default**.

Clicking **Default** lets you return your Gateway to its factory settings. Follow the onscreen directions.

The Gateway's user interface uses four basic buttons, which are listed in the table below.

BUTTON	FUNCTION
Save	To save changes.
Undo	To undo any changes and start over.
Restart	To restart the Gateway. Tip: You must restart the Gateway if you have changed your type of Internet access method (WAN type). In all other instances, you will be prompted if you need to restart the Gateway.
Help	Clicking the Help icon at the top of any screen displays the Gateway's context-sensitive help.

Note: We strongly recommend that you change the administrator password to safeguard the security of your network.

5.3 Resetting the Gateway to Its Default Settings

If you lose your Gateway link and cannot communicate with it, you can re-establish a connection by performing a “hard” reset to the factory default settings.

- Unplug the Gateway's power adapter.
- Using a paper clip, press the **Reset** button on the Gateway's front panel. While holding in the **Reset** button, plug the power adapter back in, count to 8, and then release the button. The Gateway's **SYS** LED will blink quickly eight to ten times and then it will blink slowly, about once per second. You are now guaranteed that all system settings are set to the Gateway's factory defaults.

Note: The Gateway's default IP address is **192.168.123.254**.

Appendix

Regulatory Information

FCC Part 15 B Emissions Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Declaration of Conformity

The manufacturer declares under sole responsibility that this equipment is compliant to Directive 1999/5/EC (R&TTE Directive) via the following standards:

<i>Standards</i>	<i>Dates</i>
EN 55022:	1998
EN 55024:	1998
EN 61000-3-2	1995
EN 61000-3-3	1995

The product is CE Marked.

Department of Commerce End User Statement

This item falls under the jurisdiction of the Department of Commerce, and as such, the requirement set forth in section 740-17 of the Export Administration Regulation must be complied with. See the following Web sites for more information:

- Bureau of Export Administration
<http://www.bxa.doc.gov/DPL/Default.shtm>
<http://www.bxa.doc.gov/Entities/>
- Code of Federal Regulations
http://w3.access.gpo.gov/bxa/ear/ear_data.html

Federal law prohibits the sale or distribution of certain products to certain individuals and organizations. Denied persons or organizations may not, directly or indirectly, participate in any way in any transaction involving any commodity, software or technology exported or to be exported from the United States that is subject to Export Administration Regulations. The above Web sites provide a detailed list of individuals and organizations that have been determined to present an unacceptable risk of diversion to developing weapons of mass destruction or missiles used to deliver those weapons.

Electrostatic Discharge Statement

The unit may require resetting after a severe electrostatic discharge event.

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